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GOVERNMENT OF INDIA

METEOROLOGICAL DEPARTMENT

INDIA WEATHER REVIEW, 1959

ANNUAL SUMMARY

PART B

SNOWFALL

CONTENTS

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INDIA WEATHER REVIEW, 1959

ANNUAL SUMMARY

PART B

SNOWFALL

This part contains a summary of the reports of snowfalls in the mountain ranges to the north of India based on (a) records of snowfall observations made at the observatories and (b) reports collected by the local officers from the local residents, headmen of villages or from travellers who passed through the region and then transmitted the information to this office.

The amount of snowfall is usually measured by finding the depth of undisturbed snow lying on the ground. The measurements are given in centimetres or tenths of metres. At places provided with raingauges the snow collected in the gauge is melted and measured as rain. This is indicated in the text and the measurements are given in tenths of centimetres. The heights of well known peaks are reported in the nearest metres wherever available while the heights of mountain ranges etc. are reported in tens of metres.

Cold Weather Period—January and February

I—JAMMU AND KASHMIR

SOUTH ANANTNAG DISTRICT

Srinagar.—Ten snowfalls of light to moderate intensity occurred during the month of January. The heaviest fall was 4.4 cm., the total precipitation for the month being 16.2 cm.

February witnessed ten snowfalls of moderate intensity. the total precipitation being 12.0 cm. In January and February the depth of snow accumulation was 30 cm. in the main valley, while the surrounding peaks were covered with deep snows. The snowfall was above normal for both the months.

Patni Top (Batote)—In January snow fell on four days. The heaviest fall of 46.0 cm. was recorded on 28th at the station proper, while the fall on 26th amounted to 15cm. The snowline descended upto 2700 m. above sea level. The depth of snow accumulation was 46 cm. at the station, while it was 91cm. at the low level tunnel at Banihal Pass. In February it snowed on five days, the heaviest fall occurred on 11th, when the snowline descended to 760m. The total depth of snow accumulation was 140 cm. at the station, while 110 cm. of snow remained unmelted upto the end of the period. Sansar (2286m.), Ensin Dhar (2704m.—3353m.), Kud (2487m.) and Eastern Pirpanjal (4086m.-4109m.) were visible from the station and received snow during both the months. Due to heavy precipitation Srinagar-Pathankot road was blocked for a couple of days in February. Snowfall was above normal during the period.

LADAKH DISTRICT

Leh.—Report for January was not received. In February the following accumulations were reported on nearby peaks:

Name of Peak	Accumulation in metres
Naktul	1·2
Hurker	1·2
Sming	1·1

II—THE PUNJAB (I)

CHAMBA DISTRICT

Pangi

Kilar (Pangi Range).—Snow fell on seven days in January and ten days in February, the total snowfalls in these months being 101cm. and 255 cm. respectively, the corresponding snow water amounts (or water equivalent of snow) being 6.8 cm. and 23.4 cm. The accumulation of snow on Sach Pass (4410m.) was 7.6 m. in January and 10.7 m. in February.

Churah

Tissa—Snow fell on seven occasions in January and five days in February, the total falls in these months being 30 cm. and 36 cm. respectively at the station proper. In February, at Sach Pass and Chehni Pass the respective snowfalls were 60 cm. and 90 cm. The accumulations on these passes were reported as under :

Name of pass	Accumulation of snow in metres	
	January	February
Sach (4420 m.)	1·8	3·1
Chehni (4570 m.)	2·1	3·7

Snowfall was above normal for the period.

Bhandal.—Snow fell on five days in January and four days in February, the total falls in these months amounting to 60 cm. and 120 cm. respectively. The snow accumulations on the passes in the region were as under:

Name of pass	Accumulation of snow in metres	
	January	February
Gamguhal (3370 m.)	4·6	9·1
Padhri (3050 m.)	4·0	7·6

Snowfall was above normal in both the months.

Tikri.—Snowfall occurred four times each in January and February. The snowline descended to 1520 m. in both the months. At places above 1830m. conspicuous snow accumulation was present while at still higher altitudes (3050m.) snowfall was common on every cloudy day. The average depth of snow varied from 28cm. to 305 cm. in both the months at a height above 1830m. The snow accumulations on the passes and peaks in the region were as under:

Name of pass/peak	Accumulation in metres	
	January	February
Drati Pass	3·1	3·1
Chaurasi Peak	2·7	2·7
Mehlu Pass	2·1	2·1

The snowfall was above normal during the period.

Chamba

Upper Chamba.—Snowfall occurred on six days in January and two days in February, the total falls in these months being 5 cm. and 15 cm. respectively. The snow accumulations on the passes of the region were as under:

Name of pass	Accumulation in metres	
	January	February
Padhri (3658 m.)	3·7	4·3
Basodhan (2743 m.)	1·2	1·5

Chhatrari.—Snowfall occurred on seven days in January and six days in February, the total precipitations in these months being 58 cm. and 46 cm. respectively.

Chowari.—There was no snowfall during the period.

Bathree.—Snowfall occurred on one day in each of the months January and February, the falls amounting to 6 cm. and 10 cm. respectively.

Bhanota.—Snow fell once in each of the months of January and February, the amounts being 3 cm. and 5 cm. respectively.

Bhattiyat

Kalatop (Dalhousie Forest Range)–Snow fell on eight days in January and eleven days in February, the total falls in these months being 140 cm. and 211 cm. respectively.

Basodhan Pass (2740 m.) was the only accessible pass during winter season. The depth of snow was 1.5 m. at the end of January and 1.2 m. at the end of February. The snowline descended to a height 910 m. during the period in this district. Snowfall was normal for the period.

Lower Chamba—Four snowstorms occurred in January and one in February, the snowline descended to 1220m. in January and 1680 m. in February. The depth of snow accumulations on the passes in the region were as given below:

Name of pass	Snow accumulation in metres	
	January	February
Basodhan	1·2	0·6
Banjal	0·6	0·5

The snowfall was above normal for both the months.

MAHASU DISTRICT

Chopal.—Snow fell on three days in January and six days in February, the total precipitations being 41cm. and 77 cm. respectively. On the high altitudes of Chutar, Khirki and Chur the depth of snow accumulation was 1.4 m. in January and 1.5 m. in February. The snowline descended to a height 1220 m. during the period. The snowfall was normal for the period.

Shillaroo.—Snow fell on eight days in January and nine days in February, the total falls being 57cm. and 101 cm. respectively. Snowfall was above normal for both the months.

Pandrabis.—It snowed heavily once in January. In February snow fell on twelve days, the total fall being 160cm. In February the snowline descended to a height 1220m. At the end of these months the snow accumulations on Gamoghati were 0.6 m. and 1.0 m. respectively. The snowfall was below normal in January and normal in February.

Rampur.—Snowstorms occurred on six days in January and eight days in February. The snowline descended to an elevation of 1370 m. in both the months. In January the depth of snow accumulation was 1.2 m. and 0.9 m. on Hatu and Daran Ghati peaks respectively, while in February the snow depth was 0.9 m. at Daran Ghati.

Kumarsain.—The snowline descended to an elevation of 2130 m. in January and to 1980 m. in February at Kotgarh and Kacheri. In January the depth of snowfall at Narhanda (2740 m.) was between 45 cm. to 60 cm. and in February it was 60 cm. to 90 cm. The accumulation of snow at an elevation 2740 m. was 0·3 m. to 0·8 m. in January and 0·6 m. to 0·9 m. in February. The snowfall was above normal during the period.

Kotkhai.—In January snowfall amounting to 86 cm. fell on the peaks of Naira (2290 m.), Joshla (2440 m.), Yehoo (2440 m.) and Chambi Kupar (2290 m.). The snowfall proved very useful to standing crops. Moreover there were no snowstorms during the month. No report for February was received.

Suni.—Snow fell on five days in January and six days in February, the total precipitation in these months being 100 cm. and 85 cm. respectively. The snowline descended to an elevation of 1830 m. in January and 2290 m. in February. On the well known Shalidhar peak (2740 m.), the accumulation of snow was 0·7 m. in January, which melted away by the end of February. The snowfall was above normal during the period.

Parala—No snow fell during the period.

Khadrala and Bashla.—In January the total snowfalls at Khadrala and Bashla were 172 cm. and 36 cm. respectively, while in February the corresponding quantities were 297 cm. and 74 cm. The snowfall was below normal in January and above normal in February.

Rohru—Snow fell once towards end of January amounting to 15 cm. No snow fell in February. The depth of snow at some places in the region was as under :—

Name of place	Depth of snow in cm.	
	January	February
Rohru	15	Nil
Khadrala	45	120
Sangri	55	105

Other well known passes in the region were beyond approach. The snowfall was above normal in January and below normal in February.

Arki.—In January there was one snowfall of 45 cm. at Bari Dhar (2070 m.) and 15 cm. at Kamaghoo pass (1040 m.). The same quantities have been reported as accumulations at these places. In February snowstorms occurred on two days. The snowfall was normal in January.

Jubbal.—Snowfall occurred on three days in January and four days in February, the total precipitations in these months amounting to 15 cm. and 28 cm. respectively. The respective snow accumulations in January and February were 0·5 m. and 1·8 m.

The depths of snowfall at some important places in the region were as under :

Name of place	Depth of snowfall in cm.	
	January	February
Sarain (2209 m.)	91	109
Mandha Ghati (2499 m.)	226	175
Tikri (1963 m.)	37	58
Tharoch (2081 m.)	44	74
Deya (2225 m.)	101	130
Halan (2103 m.)	66	66
Guarar (2408 m.)	150	168
Talra (3223 m.)	310	267
Chopal (2342 m.)	48	61
Banah (2195 m.)	45	102
Kanda (2164m.)	66	76
Manalag (2530 m.)	112	122
Bhaloo (1890 m.)	56	48
Reoshti (1981 m.)	57	51
Lootkari (2438 m.)	112	125
Neoti (1554 m.)	5	..
Bharach (3200 m.)	..	152
Ori (2743 m.)	..	94
Chhuchpur (2112 m.)	..	127

The snow accumulations at some peaks of the region were as given below :

Name of pass/peak	Snow accumulations in cm.	
	January	February
Talra (3223 m.)	91	89
Guarar (2408 m.)	46	51
Mandha Ghati (2499 m.)	107	152
Manalag (2530 m.)	30	61
Sarain (2209 m.)	61	76
Neoti (1554 m.)	5	..
Chur Peak (3658 m.)	122	..
Lootkari (2438 m.)	..	61
Banah (2195 m.)	..	46
Bharach (3200 m.)	..	244
Ori (2743 m.)	..	61
Chhuchpur (2112 m.)	..	122
Chopal (2342 m.)	..	41

Snowfall was above normal during the period.

KINNAUR DISTRICT

Nichar.—Snow fell on five days in January and nine days in February, the total precipitations in these months being 94 cm. and 216 cm. respectively. The snowline descended to 1520 m. in January and 1370 m. in February. All the well known passes in the region were blocked in both the months. In February at Daran Ghati the snow accumulation was 2·4 m. The snowfall was below normal in January and above normal in February.

Chini (Kalpar).—January experienced eight days of snowfall, while February witnessed ten days of snowfall, the total falls in these months being 56 cm. and 81 cm. respectively. In January passes like Haran Ghati, Brua and Sangla Ghati were blocked due to heavy snowfall and the accumulation

of snow during the month was 0·6 m. In February the snowline descended to a height 1830 m. and the snow accumulation in this month was reported to be 0.8 m. at a height of 2781 m. The snowfall was below normal in January and above normal in February.

Chini.—Snow fell on nine days in January and eleven days in February, the total falls being 58 cm. and 139 cm. respectively. No information regarding snowfall on higher peaks was available because they were beyond approach. The snowfall was above normal during the period.

MANDI DISTRICT

Mandi.—Snowfall occurred on eight days in January and four days in February. The depths of snowfall on the following well known passes and peaks were as given below.—

Name of pass/peak	Depth of snowfall in cm.	
	January	February
Shikari	185	90
Tungasi	150	90
Raigarh	165	60
Kashian	185	90
Bhubhu	..	105
Kandhi	..	60

The above quantities have also been reported as accumulations at the end of these months at these places. The snowfall was about normal during January and above normal in February.

Suket Forest Division.—At Jhungi snow fell on one day each in January and February, the falls being 10 mm. and 0·3 mm. respectively. At Karsoj and Suket no snow fell during the period. The snow accumulations on higher peaks and passes at the end of January and February were 1·2 m. and 0·6 m. respectively.

III—UTTAR PRADESH

TEHRI GARHWAL DISTRICT

January witnessed three days of snowfall while February experienced five days of snowfall. The snowline descended to a height of 1220 m. in January and 1520 m. in February. The thickness of snowcover varied from 15 cm. to 46 cm. on the peaks of Surkanda, Kanatal, Gajya, Thauldhar, Kandia and Nagtiba in January and 4 cm. to 46 cm. on the peaks of Surkanda, Nagtiba, Dhanolti, Kedardanda, Bandrapunch, Kanatal, Gajya, Thankdhar and Kandia in February. The depth of snow accumulation was 91 cm. in January and between 4 cm. to 46 cm. in February. All the passes were under snow in February. The snowfall was normal in both the months.

GARHWAL DISTRICT

January and February both experienced seven days of snowfall. The snowline descended to a height of 1370 m. in January and 1520 m. in February. The depth of snow accumulation varied from 8 cm. to 305 cm. in January and 5 cm. to 244 cm. in February. The snowfall was normal during the period.

ALMORA DISTRICT

The snowline descended to an elevation of 1830 m. both in January and February. The total amounts of snowfall and snow accumulations at the end of January and February were as given below :—

Locality	Snowfall & snow accumulations in cm. at the end of	
	January	February
	Falls	
Malla Danpur	180 to 430	210 to 490
Malla Darma	30 to 120	60 to 180
Byans, Chaudaus & Gorifat	120	..
	Accumulations	
Kautela Peak	90	185
Kafini Peak	90	245
Bankatia Peak	215	365
Pindar Peak	185	335
Nanda Devi Peak	245	425
Sundardhunga	215	365
Lipuleg	120	275
Limpialeg	185	365
Masurling	..	150
Unchdhura	..	185

The snowfall during the period was almost normal.

NAINITAL DISTRICT

Mukteswar.—Snowfalls of light to moderate intensity occurred on four days in January and five days in February, the total depths of falls in these months being 28 cm. and 11 cm. repectively. These falls extended to the areas of Nainital, Ramgarh, Gagarh, Almora etc. The snowfall was normal for both the months.

Hot Weather Period—March to May

I—JAMMU AND KASHMIR

SOUTH ANANTNAG DISTRICT

Srinagar.—No snowfall occurred during the period. In March the depth of snow on high peaks in the region was 1.8 m.

Patni Top (Batote).—No snowfall occurred during the period at the station proper. However, snowfall occurred on last two days in March on high ranges and peaks above the height of 2130 m.

Snow accumulation was present at Eastern Pirpanjal (4110 m.) and Ensin Dhar (3350 m.) both in March and April while it was restricted only to Pirpanjal range in May.

II—THE PUNJAB (I)

CHAMBA DISTRICT

Pangi

Kilar (Pangi Range).—Snow fell on seven days in March and two days in April; the corresponding snowfall amounts being 110 cm. and 15 cm. The respective snow water amounts

(or water equivalent of snow) were 110 mm. and 16 mm. The snow accumulations on Sach Pass (4410 m.) were 12.0 m., 14.0 m. and 5·0 m. in March, April and May respectively. No snowfall occurred in May. The snowfall was above normal both in March and April.

Churah

Tissa.—No snow fell in March. The accumulations of snow on Sach Pass and Chehni Pass were 3·0 m. and 3·7 m. respectively. No reports were received for April and May.

Bhandal.—In March snowfall occurred on five days on the passes of Gamguhal and Padhrl, the depths of snow being 95 cm. and 70 cm. respectively. The same amounts have been reported as accumulations at the end of March. The snowline descended to a height of 1830 m. in this month. In May one snowstorm occurred above 3050 m. The snow accumulations on Gamguhal and Padhri passes were 4 cm. and 3 cm. respectively. The snowfall was below normal during he period.
t

Tikri.—No report was received for March. It snowed twice each in April and May at a height above 3960 m. In both these months, however, snow accumulation was present at a height above 4570 m. At high altitudes above 3960 m. snowfalls were common on every cloudy day. The average depth of snow varied between 25 cm. and 60 cm. in April and 25 cm. and 30 cm. in May. The snow accumulations on the following passes and peaks were as under :—

Name of Pass/Peak	Snow accumulation in cm. in	
	April	May
Drati Pass	6	30
Chaurasi Peak	8	8
Mehlu Pass	8	5

Snowfall was above normal both in April and May.

Chamba.—In March slight snowfalls occurred on four days at Pangi. The snowline descended to a height 3660 m. The snow accumulation on Sach pass was 90 cm. No snow fell in May. The snowfall was below normal in March. No report was received for April.

MAHASU DISTRICT

Phancha—No snow fell in the period. In March the accumulation of snow on Gamoghati pass (2743 m·) was 45 cm.

Chini.—Snow fell on three days in March, the total amounting to 6 cm. No snow fell in April and May. No information regarding snowfall on higher passes is available as they were beyond approach. The snowfall was above normal in March and below normal both in April and May.

Chini (*Kalpar*).—Snow fell on two days in March, the total amount being 3 cm. No reports were received for April and May.

Rampur.—In March it snowed on Daranghati and Hatu Peaks, the respective amounts being 8 cm. and 10 cm. The corresponding snow accumulations at these places were 30 cm. and 60 cm. No snow fell in April and May.

Kumarsain.—Snow fell on the peak of Narhanda (2740m.), the amount being 1 cm. The same quantity has been reported as accumulation on the peak in this month. No reports were received for April and May.

Rohru.—No snow fell during the period.

Khadrala and Bashla.—Snow fell on eight days in March at Khadrala, the total amounting to 37 cm. No snow fell at Bashla in March. The snowfall in this month was almost normal. No reports were received for April and May.

Arki.—No snow fell in March. No reports were received for April and May.

Jubbal.—Snowfall occurred on two days in March and one day in April, the total amounts being 45 cm. and 15 cm. respectively. The snow accumulations varied from 30 cm. to 45 cm. in March, while the accumulation in April was 15 cm. The snowfall was more than normal both in March and April.

Upper Bushahar Division.— In May no snow fell at Kilba Sangla, Purbani and Nichar.

Jubbal Forest Division.—In March the snowline descended to an elevation of 1980 m. The depths and accumulations of snowfall on some peaks of the region were as under :

Name	Depths of snowfall in cm.	Accumulation of snowfall in cm.
Manalag (2530 m.)	8	15
Banah (2135 m.)	3	5
Reoshti (2285 m.)	3	..
Guarar (2410 m.)	5	120
Talra (3225 m.)	13	45
Barach (3200 m.)	45	60
Chopal (2340 m.)	3	3

The snowfall was slightly below normal. No reports were received for April and May.

MANDI DISTRICT

Mandi Forest Division.—In March the depths of snow accumulation on the following peaks were as under :

Name of peak	Accumulation in cm.
Kandhi (2440 m.)	30
Bhubhu (2745 m.)	60
Shikari (3350 m.)	60
Tungasi (2740 m.)	30
Raigarh (2900 m.)	60
Kashian (2440 m.)	30

At Shikari in April and May the snowfall amounts were 30 cm. and 20 cm. respectively. The snowfall was above normal for the period.

Suket Forest Division.—No snow fell at Jhungi, Karsoj and Suket during the period. In March the snow accumulation on high peaks was 60 cm. while in April and May no snow accumulation was present.

III—UTTAR PRADESH

TEHRI GARHWAL DISTRICT.—No snow fell during the period.

GARHWAL DISTRICT.—There were four snowfalls in March, six in April and two in May. The snow accumulations were upto 90 cm. in March, 3 cm. in April and 60 cm. in May. The snowline descended to 1830 m. in March and April, and to 2440 m. in May. The snowfall was below normal during the period.

ALMORA DISTRICT.—At Malla Darma the snowline descended to 2440 m. in March, 4270 m. in April and 4420 m. in May and the amounts of snowfall in these months were 15 cm. 60 cm., and 5 cm. to 60 cm. respectively. The snowfalls at Malla Danpur were 60 cm. to 150 cm. in March, 30 cm. to 150 cm. in April and 6 cm. to 8 cm. in May. The accumulations of snow on important peaks in the period were as under :—

Name of Peak	Accumulation in metres		
	March	April	May
Kautela	2·1	0·6	0·3
Kafini	2·4	0·9	0·5
Bankatia	4·3	2·1	1·2
Pindar Peak	3·7	1·5	0·9
Nanda Devi	4·9	2·4	1·5
Sundardhunga	4·0	1·7	1·1
Lipuleg	0·8	..	..
Limpialeg	0·8	..	..
Unchdhura	0·3	..	..

Southwest Monsoon Period—June to September

June—July

I—JAMMU AND KASHMIR

NORTH BARAMULLAH DISTRICT

Gulmarg.—There were no snowfalls in June and July. Snow accumulation on Apharwat and Handibal mountains was above normal in June and below normal in July.

SOUTH ANANTNAG DISTRICT

Srinagar.—No snowfall was experienced during the period. No snow accumulation was also reported both in June and July.

Patni Top (Batote).—No snow fell both in June and July. In June snow accumulation was present on Eastern Pirpanjal range (4110 m.) which melted away by the end of July.

II—THE PUNJAB (I)

CHAMBA DISTRICT

Pangi

Kilar (Pangi Range).—No snow fell during the period. The snow accumulation on Sach pass (4410 m.) was 1·2 m. in June, which melted away by the end of July.

Churah

Tissa.—No snow fell during June and July. The accumulations of snow on some passes of the region were as under :

Name of Pass	Snow accumulation in metres	
	June	July
Sach pass	2·4	0·6
Chehni pass	2·4	0·6
Bara pass	2·4	0·6

Bhandal.—No snow fell during the period. Snowfall was below normal in June.

Tikri.—In June snow fell at a height of 4570 m. and the accumulation of snow varied from 8 cm. to 25 cm. at this height.

In July neither snowfall nor snow accumulation was experienced.

The snow accumulations on higher passes and peaks of the region in June were as under :

Name of pass/peak	Accumulation in cm.
Drati peak	15
Chaurasi peak	8
Mehlu pass	5

The snowfall was below normal in June. No snow accumulation is reported in July.

Chamba.—No snow fell during the period.

Lower Chamba.—There occurred one snow storm in June and three in July. The snowline descended to 2740 m. in June and 2440 m. in July. The depths of snow at important peaks in the region were as under:

Name of peak	Depths of snow in cm.	
	June	July
Basodhan	5	8
Duga Bhadarwa	8	15
Juwali	15	20

The same quantities have been reported as accumulations at the end of these months. The snowfall was below normal in June and above normal in July.

MAHASU DISTRICT

Khadrala and Bashla.—No snow fell in June. No report was received for July.

Phancha.—No snow fell in June. No report was received for July.

Rampur.—No snow fell in June. No report was received for July.

MANDI DISTRICT

Mandi Forest Division.—No snowfall or snow accumulation was experienced during both the months.

Suket Forest Division.—No snow fell at Karsoj, Jhungi and Suket both in June and July.

III—UTTAR PRADESH

TEHRI GARHWAL DISTRICT.—No snow fell in July. Report for June was not received.

GARHWAL DISTRICT.—In June there occurred one snowfall, the depth of snow accumulation at a height 3200 m. varied between 1 cm. and 15 cm. No snow fell in July. The snowfall was about normal during the period.

ALMORA DISTRICT.—At Malla Darma the snowline descended to a height of 4880 m. in June and 4270 m. in July. The amount of snow in June and July was as under :

Locality	Falls in cm.	
	June	July
Malla Darma	60	Nil
Malla Danpur	5 to 18	Nil
Byans	38 to 53	15 to 23

The snow accumulations at important peaks or passes were as under :

Peak Pass	Accumulation in cm.	
	June	July
Kafini	Nil	5
Bankatia	8	15
Pindar Peak	6	14
Nanda Devi	9	18
Sundardhunga	6	13
Lipuleg	90	90
Limpialeg	160	150

The snowfall was almost normal for the period.

August—September

I—JAMMU AND KASHMIR

NORTH BARAMULLAH DISTRICT

Gulmarg.—No snow fell in August. One snowfall was experienced in September, amounting to 13 cm. Slight snow accumulation was present on Apharwat mountain in both the months. The snowfall was below normal for the period.

SOUTH ANANTNAG DISTRICT

Srinagar.—No snow fell during the period.

Patni Top (Batote).—No snowfall occurred both in August and September.

II—THE PUNJAB (I)

CHAMBA DISTRICT

Pangi

Kilar (Pangi Range).—No snowfall occurred in August and September. The depth of snow accumulation on Sach pass (4410 m.) was 60 cm. during the period. The snowfall for August was reported as normal.

Tissa.—There was neither snowfall nor any snow accumulation during the period.

Bhandal.—No snow fell during the period. Also, no snow accumulation was experienced.

Tikri.—In August very few snowfalls were observed at height 4570 m. and accumulation of snow which was conspicuous at this level, varied from 8 cm. to 25 cm. The snow accumulations on the peaks of Drati, Chaurasi and Mehlu were 15 cm., 8 cm. and 5 cm. respectively.

MAHASU DISTRICT

Phancha.—There was no snowfall during August while in September little snow fell on the peaks of the nearby mountains.

Rampur.—No snow fell at the station proper in August.

MANDI DISTRICT

Mandi Forest Division.—No snowfalls or snow accumulations were experienced both in August and September.

III—UTTAR PRADESH

TEHRI GARHWAL DISTRICT.—There were no snowfalls in August and September.

GARHWAL DISTRICT.—No snow fell in August. In September five snowfalls occurred, the amounts varying from 1 cm. to 60 cm. at heights ranging from 2740 m. to 4880 m. The snow accumulation was 60 cm. on peaks at a height 4880 m. The snowfall was normal in September.

ALMORA DISTRICT.—At Malla Darma the snowline descended to a height 4880 m. in August and 4570 m. in September.

At Malla Danpur light snowfall was experienced in August while in September the amount of snowfall varied between 13 cm. and 75 cm.

The following table gives the depths of accumulations of snow at the end of August and September on important peaks :

Name of Peak	Accumulation in cm.	
	August	September
Kafini	6	6
Bankatia	16	16
Pindar	15	15
Nanda Devi	18	18
Sundardhunga	13	10

During the period snowfall was almost normal.

Post Monsoon Period—October-December

I—JAMMU AND KASHMIR

GILGIT DISTRICT

Gurez.—No report was received for October. Snow fell on six days in November and three days in December, the total amounts in these months being 50 cm. and 40 cm. respectively. Snowstorms were experienced on two days in November on Razdhani pass (3660 m.). At the station proper the accumulation of snow was 4 cm. in November and 20 cm. in December while on higher passes of the region the accumulations were 45 cm. in November and 60 cm. to 75 cm. in December.

In December the snowfall was much below normal

SOUTH ANANTNAG DISTRICT

Srinagar.—During the period snowfalls occurred on the surrounding mountains. In November and December light snowfall occurred at the station, accompanied with rain and shower, the total precipitations in these months being 10·1 cm. and 1·4 cm. respectively. The snowfall was normal in October, above normal in November and below normal in December.

Patni Top (Batote).—Snow fell on two days in October on Eastern Pirpanjal Range (4110 m.) and one day in November on Eastern Pirpanjal, Sansar (2290 m.) and Kud peaks (2700 m. to 3350 m.). No snow fell in December. Snow accumulation was present on the high peaks of the region during the period.

II—THE PUNJAB (I)

CHAMBA DISTRICT

Pangi

Kilar (Pangi Range).—No report was received for October. It snowed on four days in November and two days in December, the total falls in these months being 43 cm. and 75 cm. respectively, and the corresponding amounts of water (melted snow) being 8 cm. and 10 cm. In November the snow accumulations on Sach pass (4410 m.) and Chehni pass were 1·8 m. and 2·1 m. respectively. In December the accumulation of snow on Sach pass was 2·4 m. In November the snowfall was normal while in December it was above normal.

Churah

Tissa.—Snow fell on seven days in October, six days in November and one day in December. The snowline descended to a height 3660 m. in October. The depths of snowfalls on some passes of the region were as under :

Name of pass	Depth of snowfall		
	October	November	December
Sach (4420 m.)	45 cm.	2·4 m.	60 cm.
Bara	45 cm.	..	..
Chehni 4570 m.)	..	2·9 m.	75 cm.

The snowfall was reported as normal in October and below normal in November.

Bhandal.—In October snowfall occurred on one day above a height 2130 m. the depth of fall varying from 15 cm. to 25 cm. In November slight snowfall occurred above a height 2440 m. The snow accumulations on some passes were as under :—

Name of pass	Snow accumulation in cm.	
	October	November
Padhri	30	35
Gamguhal	45	30

Tikri.—In October snowfall occurred twice above height 3050 m. the depth of fall varying from 10 cm. to 25 cm. In November snow fell thrice above a height 2440 m., the depth of snow varying from 8 cm. to 90 cm. At still higher altitudes snowfall was common on every cloudy day both in October and November. The depths of snow accumulation on some passes or peaks were as under :

Name of pass/peak	Snow accumulation in cm.	
	October	November
Drati pass	25	90
Chaurasi Peak	18	60
Mehlu pass	13	30

Snowfall was above normal in October and below normal in November. No snowfall report was received for the month of December.

Chamba—No snow fell in October. In November snowfall occurred on the peaks of Pangi and Bharmour amounting to a depth of 1·2 m. and the snow accumulations on the well known passes were 1·8 m. In December snow fell on the peaks of Pangi, Bharmour and Churah above a height 1980 m. The snow accumulations on some passes in December were as given below :—

Name of pass	Snow accumulation in December
Basodhan (2740 m.)	90 cm.
Sach (4420 m.)	1·5 m.
Padhri (3660 m.)	1·2 m.

The snowfall was above normal in November and below normal in December.

Lower Chamba.—No report was received for October. In November three snowstorms occurred while December experienced two, the snowline descending to 1830 m. both in November and December. The depths of snow accumulations on some well known passes were as under :

Name of pass	Depth of snow accumulations in cm.	
	November	December
Basodhan	15	23
Duga Bhadarwa	20	30
Juwali	25	36

The snowfall was below normal in both the months November and December.

MAHASU DISTRICT

Phancha.—No report was received for October. In November snow fell above a height of 3660 m. at the end of the month. In December also snowfall was confined to higher peak at a height 3050 m. at the end of the month.

Nichar.—In December no snow fell at the station proper while the snowline descended to between 2740 m. and 3050 m. The depth of snow accumulation on Spiti pass was 30 cm. to 60 cm. The snowfall was below normal in this month. No reports were received for October and November.

Chini.—In December snow fell on one day amounting to 3 cm. No information regarding snowfall on higher passes was available as they were beyond approach. The snowfall for the month was below normal. No reports were received for the months October and November.

Rampur.—No snow fell during the period.

Arki.—No snow fell during the months November and December.

Lower Pabar Range.—No report was received for October. At Khadrala snow fell on one day each in November and December, amounting to 5 cm. and 1 cm. respectively. No snow fell at Bashla. Snowfall was about normal in both the months.

Jubbal.—No snow fell in December.

KANGRA DISTRICT

Seraj.—Slight snowfall occurred on high peaks in the region in November and December. Depths of snowfall on peaks were as follows :—

Name of peak	Depth in cm.	
	November	December
Jalori	5	3
Lambri	8	..
Bashleo	..	5

Nirmand.—There were no reports in October and November. No snow fell in December.

MANDI DISTRICT

Mandi Forest Division.—No snow fell in October and December. In November snowfall amounting to 30 cm. fell at Shikari (3350 m.). The same quantity has been reported as accumulation at this place. Snowfall was reported below normal in November.

III—UTTAR PRADESH

TEHRI GARHWAL DISTRICT—No snow fell during the period at the station proper. In November snowfall occurred on peaks while in December 5 cm. of snowfall occurred at Dedital and Kelsu (2740 m.). The same amount has been reported as accumulations in December.

Snowfall was reported as below normal in December.

GARHWAL DISTRICT.—There had been three snowfalls in October, the depth of snowfall varying from 3 cm. to 90 cm. November also experienced two snowfalls, the total depth amounting to 1·2 m. The snowline descended to a height 2740 m. in October and 3050 m. in November. No snow fell in December. The snowfall was below normal during the period.

ALMORA DISTRICT.—Snowfall occurred on peaks above 3050 m. in October amounting to 5 cm. in Malla Darma There were three snowfalls in November above the height of 4570 m. At Malla Danpur snowfall was reported on high peaks during the period. Accumulations of snowfall at Malla Darma and Malla Danpur in November were 60 cm. and 25 cm. respectively. The following table gives the accumulation of snowfall at important peaks in the region.

Name of peak	Accumulation		
	October	November	December
Kafini	97 cm.	81 cm.	10 cm.
Bankatia	94 cm.	3·6 m.	10 cm.
Kautela	66 cm.	..	..
Pindar	99 cm.	2·8 m.	30 cm.
Nanda Devi	97 cm.	3·6 m.	..
Sundardhunga	84 cm.	2·8 m.	30 cm.

Snowfall was normal during the period.

Summary

Cold Weather Period—January and February

Snowfall during the period was above normal in Jammu and Kashmir and Punjab (I) and normal in Uttar Pradesh.

Hot Weather Period—March to May

Snowfall was about normal in Punjab (I) and slightly below normal in Uttar Pradesh.

Monsoon Period—June and July

As usual practically no snow fell in Jammu and Kashmir and Punjab (I) while in Uttar Pradesh it was normal.

Monsoon Period—August and September

As usual very little snow fell in Jammu and Kashmir and Punjab (I) while in Uttar Pradesh it was normal.

Post Monsoon Period—October to December.

Snowfall was normal in Jammu and Kashmir and Punjab (I) while in Uttar Pradesh it was slightly below normal for the period.

N.B.—It is not possible to adopt a single classification of seasons which will be satisfactory for the whole of India. The classification adopted in this publication, is, however, considered as the most satisfactory one and the least open to objection especially from the point of view of rainfall.

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